

Appl. No.: 10/718,230

Amdt. Dated November 9, 2005

Response to Office Action Mailed August 11, 2005

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in this application.

1. (Currently Amended) An automatic tracking apparatus for a reflector comprising:

a surveying machine body;

an illumination portion disposed in said surveying machine body for illuminating a measurement light toward a reflector;

a light receiving portion which is disposed in said surveying machine body and which has an image sensor for receiving a reflection light image of the measurement light illuminated toward said reflector;

an arithmetic means for calculating device configured to calculate a position of the reflection light image from said reflector in an area of said image sensor; and

a rotation mechanism for rotating said surveying machine body so as to position said reflector on a light receiving optical axis of said light receiving portion based on the position obtained by said arithmetic means,

wherein said light receiving portion is provided with a light receiving sensor having a smaller area than the area of said image sensor on said light receiving optical axis and also in a conjugated position with said image sensor, and said arithmetic ~~means~~ device distinguishes the

reflection light image of the reflector from a light image other than the reflection light image of said reflector based on an output of said light receiving sensor.

2. (Currently Amended) The automatic tracking apparatus for ~~the~~ a reflector according to Claim 1, wherein said illumination portion outputs a modulated pulsed light, and said light receiving portion is provided with a synchronization detecting circuit for synchronously detecting the output of said light receiving ~~element~~ sensor based on said modulated pulsed light.

3. (Currently Amended) The automatic tracking apparatus for ~~the~~ a reflector according to Claim 1, wherein said image sensor and said light receiving sensor are disposed in the conjugated position through a beam splitter, and said light receiving sensor receives a quantity of light in ~~the~~ a vicinity area of the image center of said image sensor.

4. (Currently Amended) The automatic tracking apparatus for ~~the~~ a reflector according to Claim 1, wherein said illumination portion emits a modulated pulsed light, which is a the measurement light, in an accumulation time during one field of said image sensor, and said image sensor the arithmetic device detects the position of the received modulated pulsed light received by the image sensor, and the light receiving sensor judges based on the modulation of the pulsed light whether or not distinguishes the reflection light image of the reflector received by the light receiving sensor is one from the light image other than the reflection light image of the reflector.

5. (Currently Amended) The automatic tracking apparatus for ~~the~~ a reflector according to Claim 2, wherein the arithmetic device controls and rotates the surveying machine body based on the position of the modulated pulsed light received by said image sensor, such that the surveying machine body is rotated so as the position of said pulsed light to be becomes the center of said image sensor, and the surveying machine body tracks the reflector based on the reflection light image of the reflector distinguished by the arithmetic device judgment of said light receiving sensor.